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[THIRD SERIES.]

“..... per litora spargite muscum,
Naiades, et circum vitreos considite fontes :
Pollice virgineo teneros hinc carpite flores :
Floribus et pictum, divæ, replete canistrum.
At vos, o Nymphæ Craterides, ite sub undas ;
Ite, recurvato variata corallia trunco
Vellite muscosis e rupibus, et mihi conchas
Ferte, Deæ pelagi, et pingui conchylia succo.”
N. Parthenii Giannettasii Ecl. 1.

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I.—*Description of some new Species of Entomostracous Crustacea.*
By W. BAIRD, M.D., F.L.S.

[Plate I.]

IN one or two late Numbers of the 'Annals and Magazine of Natural History' (Oct. 1859 and Sept. 1861), I have described several new species of exotic Entomostraca bred in this country from mud brought in a dry state from the neighbourhood of Jerusalem, which was placed in pure water and left to stand a certain time during the warm weather of spring and summer. The number of species amounted to six; and it was interesting to observe the great number of individuals of two or three of the species amongst these, that successively made their appearance as the warmth of the weather increased. Since then I have had another opportunity afforded me of observing the extraordinary power the ova of these animals possess in resisting the action of long-continued drought. Sulzer and several other authors assert that the adults themselves possess this power also, and maintain the opinion that, after being completely dried up for a length of time, they revive when placed in water. I am not prepared to deny this *in toto*, especially when they are in their native haunts, deeply immersed in the soft mud; but the experiments of Straus and Jurine upon individuals exposed to artificial exsiccation go to prove the contrary of Sulzer's statement. That the ova of

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many Entomostraca, however, possess this faculty in a great degree there can be no doubt. In the beginning of the spring of this year I had a small quantity of dry mud from South Africa supplied to me by Mr. Henry Woodward of the British Museum. This mud had been given to him by Mr. W. S. M. d'Urban, who received it from Dr. Rubidge as taken by him from the bed of a dried-up "vley" (or large pond) near Port Elizabeth, Cape Colony, in August 1861.

In the month of January 1862 it was placed in some pure spring-water, care having been taken to see that it contained no animal or vegetable matter. In April, as the weather became somewhat warm, a number of small Entomostracous Crustacea made their appearance. These were all young animals, evidently bred from the ova contained in the mud. Numerous specimens of the carapaces of two or three species were found lodged in the mud; but no adults revived from their exsiccated state. One of these dried carapaces was that of a Phyllopodous Crustacean, a species of *Estheria*, which I have described in a paper read before the Zoological Society this year, and which I have named *Estheria Rubidgei*. No young of this species have as yet made their appearance; and only one species of the Branchiopoda has showed itself. This is a species of *Daphnia*, closely resembling in almost every particular the *Daphnia longispina* of Müller (= *D. pulex*, var. *a* of the 'British Entomostraca'). This *Daphnia* would appear to be, along with the *D. Atkinsoni* from Jerusalem (Ann. & Mag. Nat. Hist. ser. 3. vol. iv. p. 281, pl. 5. fig. 2) and *D. Newportii* from India (Proc. Zool. Soc. 1860, p. 446), the representative in those countries of our common European *Daphnia pulex*. Two species of Lophyropodous Crustaceans have shown themselves also. One of these, not quite satisfactorily made out, is a species of *Cypris* somewhat resembling the English species *C. tristriata*. The other, which has arrived at a state of maturity, is a very distinct species; and of this I subjoin a figure and description.

Legion LOPHYROPODA.

Order OSTRACODA. Family Cyprididæ.

Genus CANDONA.

Candona d'Urbani, Baird. Pl. I. figs. 1, 1a, b.

Carapace elongately oval, flattened at both extremities, narrower posteriorly than anteriorly. The central portion of the carapace is much swollen, and has a slight indentation at about one-third from the anterior extremity, indicated by a slightly raised knob or protuberance on the side near the dorsal margin. Externally the surface of the carapace is hispid with short strong

setæ, and variously marked with dark-green streaks, and, when examined by the lens, appears entirely covered with punctations. The ventral margin is slightly concave or sinuated in the centre, while the dorsal margin is nearly straight for half its length, then slopes down at each extremity, the anterior of which is rounded, and the posterior somewhat acuminate. The valves of the carapace unite closely in the centre of the ventral margin, but are slightly gaping at both extremities. Internally the centre of the valve is of a dull colour, while the two extremities are shining and smooth, and there is a slight duplicature of the shell at the edge. The spot marked externally by the slight protuberance near the anterior margin is internally represented by a depression. The lucid spots on the carapace are small and indistinct.

Length 3 lines; breadth $1\frac{1}{2}$ line.

Hab. Freshwater ponds, Cape Colony.

This is about the largest species belonging to the family Cyprididæ that I have yet seen. A number of dead valves were found in the mud, but only two or three living specimens made their appearance. One, which must have been bred from a dried ovum, made its appearance at the end of April. At first small, it gradually grew to what I suppose, from the size of the dead specimens in the mud, to be its full growth, about the middle of May. It is the specimen figured. Its habits were rather peculiar. It generally kept close to the bottom of the vessel in which it was preserved, either walking upon the mud or, when the weather was cold, digging under the surface or creeping under the little lumps of earth that remained unincorporated. When it rose to the surface of the water, it was by walking up along the side of the vessel, descending afterwards, as it were, by its own gravitation.

A few other species of Ostracodous Entomostraca from other habitats have occurred to me, figures and descriptions of which I here subjoin.

1. *Cypris unispinosa*, Baird. Plate I. figs. 2, 2 a, b.

Carapace elongately oval, a little narrower anteriorly than posteriorly. The carapace is moderately tumid, the most prominent portion being near the anterior extremity. Ventral margin nearly straight, slightly sinuated or concave; the dorsal margin is nearly straight for about half its length, then slopes down to each extremity. Externally the carapace appears to be smooth, until examined by a tolerably high power, when it is seen to be minutely punctate, and it is marked by several dark-green streaks and lines. The right valve is peculiarly marked by being at its posterior extremity prolonged into a short sharp

spine, while the left valve is rounded and free from any such prolongation. The valves are nearly equal in breadth, and do not overlap each other at their ventral margin, but appear to fit into a slight groove, which, when viewed from the interior, may be seen to run all round the ventral margin and the edges of both extremities. The setæ on the pediform antennæ are five in number, long, and finely plumose.

Length 2 lines; breadth 1 line.

Hab. Sandwich Islands; W. Newcomb, Esq. Jamaica; E. Chitty, Esq.

• 2. *Cypris Texasiensis*, Baird. Pl. I. figs. 3, 3a.

Carapace of an ovoid shape, narrowed and somewhat flattened anteriorly, considerably swollen and tumid posteriorly, and of a dull uniform white colour, with the exception of the margin of the anterior extremity, which is of a dark hue. Ventral margin nearly straight, or only slightly sinuated, but distinctly marked with a notch near the anterior extremity, somewhat resembling that of a Cypridina. Dorsal margin rounded, as well as both extremities. The two valves fit closely to each other. The surface of the carapace is quite smooth and shining or only slightly punctate, the punctations being only visible when under a high power. Lucid spots placed near the middle of the valve.

Length $1\frac{1}{2}$ line; breadth at broadest part 1 line.

Hab. Texas; Mr. Cuming.

As only the empty carapace remains, I was unable to distinguish whether this species belongs truly to the genus *Cypris* or *Candona*.

3. *Cypris Chittyensis*, Baird. Pl. I. figs. 4, 4a, b.

Carapace elongately elliptical, narrow, and of a uniform green colour, marked here and there with streaks of a darker green hue. The ventral margin is sinuated in the centre; the dorsal margin and the two extremities, which are both of equal size, are rounded. External surface of carapace quite smooth and shining. The edges of the valves, especially internally, are strongly sulcated, and at either extremity there is, on the inside of the shell, a kind of shelf which is also strongly striated. The posterior shelf appears the larger of the two. Pediform antennæ each furnished with a bundle of about four or five setæ, which are of exactly the same length as the antenna, but are not plumose. The caudal filaments are of a peculiar form; they are of moderate length, flattened, and differing from each other in some respects. One of them is strongly serrated or toothed on its outer edge, while the other (which is somewhat narrower) is simple, or is without the strong teeth or serrations which cha-

racterize the first described. Each of them give out, as usual, two short appendages or fingers at its extremity, both of which are strongly serrated.

Length 1 line; breadth $\frac{1}{3}$ line.

Hab. Yallah's Hill, Jamaica; E. Chitty, Esq.

4. *Cypris Verreauxii*, Baird. Plate I. figs. 5, 5 a.

Carapace oval, elliptic, of a green colour, with darker patches and streaks of the same hue. Ventral margin slightly sinuated about the middle of its length; dorsal margin rounded. Extremities nearly equal in size, and rounded. Surface of valves smooth and shining. Internally the valves are furnished with a shelf at each extremity, which, as well as the edges of the valves themselves, are simply striated. The setæ of the pediform antennæ are short, and not plumose. Caudal filaments alike, both finely serrated on the edges, and sending off two short appendages, which are rounded and sharp-pointed, and very finely serrated. This species is considerably like the preceding, but is broader and shorter; the edges of the shelf internally are merely striated, while those of *Chittyensis* are strongly sulcate. The setæ of the pediform antennæ and the caudal filaments differ also considerably.

Length $\frac{3}{4}$ line; breadth nearly $\frac{1}{2}$ line.

Hab. Chili; M. Verreaux.

5. *Cypris Yallahensis*, Baird. Pl. I. figs. 6-6 a.

Carapace rotundately ovoid, much swollen, narrower anteriorly, of a green colour. Ventral margin slightly sinuate at about the middle of its length. Dorsal margin rounded; greatest height at about its middle. Extremities rounded. Externally the surface of the carapace is hispid and strongly punctate.

Length about $\frac{1}{6}$ line; breadth about the same.

Hab. Yallah's Hill, Jamaica; E. Chitty, Esq.

EXPLANATION OF PLATE I.

- Fig. 1.* *Candona d'Urbani*, on its side, magnified 8 diameters: 1 a, the same, seen from underneath, magnified 8 diameters, with natural size annexed; 1 b, internal view, magnified 8 diameters.
- Fig. 2.* *Cypris unispinosa*, on its side, magnified 8 diameters; 2 a, the same, seen from underneath, magnified 8 diameters, with natural size annexed; 2 b, internal view, magnified 8 diameters.
- Fig. 3.* *Cypris Texasiensis*, on its side, magnified 8 diameters, with natural size annexed; 3 a, the same, seen from underneath, magnified 8 diameters.
- Fig. 4.* *Cypris Chittyensis*, on its side, magnified 20 diameters; 4 a, the same, seen from underneath, magnified 20 diameters, with natural size annexed; 4 b, internal view, magnified 20 diameters.

Fig. 5. *Cypris Verreauxii*, on its side, magnified 20 diameters; 5 a, the same, seen from underneath, magnified 20 diameters.

Fig. 6. *Cypris Yallahensis*, on its side, magnified 40 diameters; 6 a, the same, seen from underneath, magnified 40 diameters, with natural size annexed.

II.—On the Systematic Position of the Charybdeidæ.

By FRITZ MÜLLER*.

ESCHSCHOLTZ's section of the *Discophoræ phanerocarpæ* formed a well-defined group of closely allied animals, united by a great number of common characters:—the disk a shallow and smooth segment of a sphere, but capable of being more strongly arched during natation, with a notched margin, in the notches of which, always to the number of eight, are the marginal corpusecles with crystals insoluble in acids; round the mouth four arms, and alternating with these, in peculiar pits, the sexual organs, forming bowed bands folded like frills; the stomachal filaments in the same place, and so forth. The mouth, indeed, was sometimes freely open (*Medusidæ*) and sometimes closed, and, instead of it, numerous orifices on the arms (*Rhizostomidæ*); but this peculiarity of the *Rhizostomidæ*, important as it certainly is for their mode of obtaining nourishment, did not disturb the morphological unity of the group, as it is derived without difficulty from the ordinary form of mouth †. Some subsequently discovered somewhat anomalous forms of *Medusidæ* likewise did not prejudice the unity of the general picture, which they only served to complete ‡.

* Translated from Wiegmann's 'Archiv,' 1861, by W. S. Dallas, F.L.S.

† Gegenbaur (Zeitschr. für wiss. Zool. viii. p. 210, note) declares the polystomism of the *Rhizostomidæ* to be a paradox not reconcilable with the general plan of the *Medusæ*, and even doubts the fact. The fact is easily ascertained, and has lately been repeatedly proved, even by myself. Its explanation also seems to me to be pretty easy. A temporary polystomism, if it may be so called, may be easily seen in Hydroid *Medusæ*, where the margins of a much-folded four-lobed oral fringe lie upon each other here and there. Thus also the polystomism of the *Rhizostomidæ* will result from the growing together of the membranous laminae which surround the arms of the *Phanerocarpæ*. When the orifices of the arms have the form of long slits, often continued into strap-like tentacles, as in a *Cephea* of the South-Brazilian coast, scarcely any doubt can remain as to this mode of production. It seems more difficult to explain the perforation of the peduncle of the arms, or its "origin with four roots," as occurs in the same *Cephea*, and, according to Forskal, in *C. octostyla*.

‡ Such as *Nausithoë*, Köll., with its eight extremely simple sexual glands, and *Trichoplea*, n. g., with marginal corpusecles in deep niches on the under surface, two inches from the undivided margin of the disk, which measures two spans in diameter. Amongst the older, less accurately-known species, *Medusa persea*, Forsk. (*Rhizostoma*, Eschsch.), is certainly to be placed with the "*Acraspeda*," notwithstanding its undivided margin and large velum.